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placing in a sample tray a fruit matrix, said fruit matrix being fruit particles which are within a matrix selected from the group consisting of a sugar matrix, a starch matrix or a sugar and starch matrix, said fruit matrix being of the kind used in fruit fillings, toppings, dairy products or cooked food products;

c. 2
illuminating said fruit matrix so that an image may be obtained in which the fruit particles are distinguishable from the background;

capturing a computer-readable image of at least a portion of said illuminated fruit matrix; and

using a computer and an image analyzing software program to analyze said image and obtain information concerning said fruit particles without removing the fruit particles from the fruit matrix.

REMARKS

At the time of the second Official Office Action following the filing of the Request for Continued Examination (RCE) in the above captioned application, claims 1-10 and 12-20 were present in the application. Of those claims, claims 1 and 10 were independent claims directed to the apparatus and claim 12 was an independent claim directed to the process for the measurement of fruit particles in a matrix.

In that last non-final Office Action all of the claims were rejected as follows:

1. Claims 1, 3-6 and 12 were rejected as obvious under 35 U.S.C. §103(a) over QUEISSER et al. (5,818,953), previously cited, in view of WILKINSON et al. (4,844,937), newly cited;

2. Claims 2, 7-10, 13, 14, 17 and 18 were rejected under 35 U.S.C. §103(a) over QUEISSER et al. in view of WILKINSON et al., and further in view of BOLLE et al. (5,546,475) previously cited;
3. Claims 15 and 19 were rejected as obvious under 35 U.S.C. §103(a) over QUEISSER et al. in view of WILKINSON et al., and further in view of SISTLER et al. (4,975,863), previously cited;
4. Claims 16 and 20 were rejected as obvious under 35 U.S.C. §103(a) over QUEISSER et al., WILKINSON et al., SISTLER et al. and BOLLE et al.; and
5. Claims 1-20¹ were rejected under 35 U.S.C. §103(a) as obvious over HECK et al. (5,845,002), previously cited, in view of WILKINSON et al. and SISTLER et al.

The present invention is directed to the discovery by applicants that conventional, camera computer imaging which was previously employed in the quality inspection of other products, such as contact lenses, semiconductor wafers, electronics and pharmaceuticals, may be employed in the measurement of fruit particles in a starch and/or sugar matrix. Prior to applicants' discovery, the fruit particles in the matrix were washed on a screen to remove the starch and/or sugar matrix so that the fruit retained on the screen could be accurately weighed and analyzed. However, applicants have discovered that camera computer imaging may be employed on such fruit particles without the need to remove the starch and/or sugar matrix. To applicants' knowledge camera

¹Claim 11 was long ago canceled and was not present in the application at the time of the last Official Office Action.

computer imaging had never been used in this manner before applicants' discovery.

All of the claims presently in the application expressly spell out that the fruit particles are not removed from the matrix during analysis, but remain in the matrix which is "selected from the group consisting of a sugar matrix, a starch matrix or a sugar and starch matrix", and that such fruit matrix is "of the kind used in fruit fillings, toppings, dairy products or cooked food products".

In the last Office Action, the prior rejection of the claims in part on applicants' own admissions has been withdrawn, and in place of that rejection, the newly cited WILKINSON et al. has been relied upon.

None of the Prior Art Renders the Claimed Invention Obvious

None of the prior art which has been relied upon in the rejection of the claims, i.e. QUEISSER et al., HECK et al. and/or the newly cited WILKINSON et al., discloses the camera computer imaging of fruit particles, and even more significantly, of fruit particles within a sugar and/or starch matrix of the type claimed, either when that art is considered individually or is combined.

QUEISSER et al. discloses nothing more than camera computer imaging of french fries which are methodically and symmetrically lined up in a tray during the imaging. In the stated rejections, e.g. the independent claims 1, 10 and 12, the statement has been made throughout the course of prosecution that "QUEISSER et al. disclose an apparatus for measurement of the **fruit particles** comprising". However, QUEISSER et al. contains absolutely no disclosure or suggestion whatsoever of the analysis of fruit or

fruit particles, or that such fruit or fruit particles is in a starch and/or sugar matrix as claimed. QUEISSER et al. does not even contain the word or words "fruit" or "fruit particles" within the four corners of the patent.

Also of significance the french fries which are imaged in QUEISSER et al. are entirely different in nature, consistency and distribution than that which is imaged in the present claimed invention. In the present invention the material imaged is

a fruit matrix of fruit particles which are within a matrix selected from the group consisting of a sugar matrix, a starch matrix or a sugar and starch matrix, said fruit matrix being of the kind used in fruit fillings, toppings, dairy products or cooked food products....

In this material the fruit particles are random in size, shape and distribution in the sugar and/or starch matrix contrary to the french fries of QUEISSER et al. In QUEISSER et al. the french fries are not in any matrix whatsoever much less a sugar and/or starch matrix, are substantially uniform in size and shape and, during imaging, are arranged in a highly ordered distribution in the grooves 58 of the inspection tray 56, as seen in FIGS. 4A and B of QUEISSER et al.

Also of critical significance, is that the french fries in QUEISSER et al. are imaged in an essentially dry condition when in the trays 56. On the contrary, in the present invention the fruit matrix which is imaged of fruit particles in the sugar and/or starch matrix is a matrix which is "of the kind used in fruit

fillings, toppings, dairy products or cooked food products". Such matrixes are typically fluid or liquid in nature. For example:

1. KAUFMAN et al. U.S. Patent No. 4,952,414, Exhibit A attached, is within a food art specifically mentioned in applicants' description, namely the putting up of yogurt food products. Passages in the lower third of column 2 and the upper quarter of column 3 reference the term "matrix" as being an emulsion in which the food pieces are dispersed throughout. The particular matrix of the patent is discussed in some detail in columns 5, 6 and 7.
2. GROSS U.S. Patent No. 4,379,796, Exhibit B attached, uses the term "matrix" in the sense of "a liquid matrix such as sugar containing syrup." See, for example, line 27 of column 6.
3. In the abstract of NOFFSINGER et al., "Liquid chromatographic determination of polydextrose in food matrixes," Journal--Association of Official Analytical Chemists, Vol. 73, No. 1, 1990, Exhibit C attached, reference is made to aqueous extraction of polydextrose from the food matrix, which is in accordance with applicants' use of "matrix".
4. The abstract of European Patent No. 00225154, SANDERSON et al., Exhibit D attached, refers to a gelled food product comprising a matrix, including "fruit or fish gel."

5. Chapter 7 from Processing Fruits: Science and Technology, Volume 1, 1996, SOMOGYI et al., Exhibit F attached, while dealing with freezing of fruit, has several references to a fruit and a matrix. For example, the description of the matrix occurs in relation to the aqueous liquid fraction at pages 172, 173, 174 and 175.

Such relatively fluid or liquid matrix of the present invention presents potential reflectivity problems which could interfere with the optical imaging which takes place in the present invention. Indeed, this is a reason that it was previously believed that the fruit particles need to be removed from this fluid or liquid matrix if it was to be reliably imaged. One skilled in the art would not look to the imagining of the relatively dry non-fluid non-liquid french fries of QUEISSER et al. to solve the reflectivity problems presented by the fluid or liquid matrix of the present invention.

The newly cited WILKINSON et al. does not cure the critical failures of QUEISSER et al. WILKINSON et al. discloses puffable snack food "half products" formed of fine particulate corn materials having a starch content which is predominantly from corn and which will expand to form a final product by frying or baking to puff into the final product. In WILKINSON et al. the dough containing the corn is extruded from a die and is then treated over the course of hours to dry the dough to the half product which is to be used for later puffing. This half product is probably even dryer than the french fries of QUEISSER et al. and is certainly not the fluid or liquid matrix which is imaged in the present invention. Thus, one skilled in the art would not look to solving

the problems presented by a fluid or liquid matrix of the present invention to the dried half product of WILKINSON et al.

WILKINSON et al. does show cross-sectioned images of the half products made by Examples 1-4 in FIGS. 2-2C. Although these images do show materials in a starch matrix, it is a dry rather than a fluid or liquid starch matrix as previously discussed, and which were

prepared by excising a small piece from each half product, using a miniature saw, then placing the excised piece in liquid fluorinated hydrocarbon refrigerant at approximately -190°C (-310°F) and allowing the piece to equilibrate thermally, then transferring the piece to liquid nitrogen and fracturing the piece to present a cross-sectional surface, then placing the piece under vacuum to allow the liquid nitrogen to boil off and remaining water ice crystals to be removed by sublimation, then mounting the sample on the scanning electron microscope stub, evaporatively coating the cross-sectional surface with carbon and sputter coating with gold to render the cross-sectional surface electrically conductive.

Column 10, lines 1-14. This procedure is certainly not the photo optic procedure with camera of the present claimed invention or a fluid or liquid matrix. Indeed, it is expressly an electron microscope procedure as opposed to a camera optic procedure as claimed, and one skilled in the art would not look to the teaching of the WILKINSON et al. electron microscope procedure for modification of the QUEISSER et al. camera optic procedure. They are entirely different procedures from each other.

It is also noted that the electron microscope procedure discussed in WILKINSON et al. and the results of which are shown in FIGS. 2-2C do not have the purpose of "measurement of particles" in the matrix much less of fruit particles as in the present claimed invention. The electron micrographs in FIGS. 2-2C of WILKINSON et al. are simply presented for the purpose of showing the differences in the surfaces of each of the products of the WILKINSON et al. examples (col. 10, line 24 - col. 11, line 17) and are not performed in WILKINSON et al. as an ongoing measurement technique during production as in the present invention.

HECK et al. discloses camera computer imaging of whole single items of citrus fruit by measuring the fruit skins. HECK et al. contains no disclosure or suggestion of the analysis of food particles or of any food product which is in a matrix, much less the sugar and/or starch matrix of the claimed invention, or of any foods which are random in distribution in such matrix.

In conclusion, even when the disclosures of QUEISSER et al. , WILKINSON et al. and HECK et al. are combined, there is no disclosure or suggestion whatsoever of camera computer imaging of any food product which is in a matrix "of the kind used in fruit fillings, toppings, dairy products or cooked food products", i.e. in fluid or liquid conditions. All of the materials imaged in the prior art which has been relied upon to reject the claims are dry. And, none of the remaining secondary references supply these critical failures of teaching.

QUEISSER et al. Has Been Overcome By the §1.131 Declaration

Applicants continue to assert their position that the original Declaration Under Rule 131 filed May 23, 2000 and the Supplemental Declaration Under Rule 131 filed February 13, 2001 clearly overcome QUEISSER et al. as prior art and, therefore, obviate all of the rejections based upon QUEISSER et al. as prior art.

The Office appears to have taken the position that the date of Exhibit "F" to the original Declaration is critical to establishing reduction to practice of the invention. More specifically, the Office appears to state that, because Exhibit "F" is dated after the filing date of QUEISSER et al., applicants have failed to establish reduction to practice prior to the filing date of this patent.

Applicants again respectfully point out that Exhibits "A" through "E" of the original Declaration, together with the averments of the Declarations themselves, establish a reduction to practice of a "mock up" of the claimed invention before the QUEISSER et al. filing date. Exhibit "F" was provided by way of a confirmation of this reduction to practice. Exhibit "F" additionally shows all of the components of the earlier mock-up. The difference is that Exhibit "F" shows a cabinet having hinged doors on the front of the cabinet, rather than a more rudimentary cabinet of the mock up. Hinged doors are not an element of the claims.

Applicants refer especially to paragraph 9 of the original Declaration which notes that Exhibit "E" reports successful testing of the claimed computer imaging method, using the mock-up

apparatus. In addition, paragraph 10 of the original Declaration provides specifics of the mock-up test equipment used to accomplish this successful testing. That paragraph details the features which had been reduced to practice by the time of Exhibit "E", which was prior to the effective filing date of QUEISSER et al. And, paragraph 3 of the original Declaration avers that all of these activities were made and completed in the United States of America.

The Office has also alleged that contradictory statements appear in paragraphs 3 and 4 of the original Declaration regarding the date of Exhibit "F". Applicants respectfully disagree that paragraphs 3 and 4 of the original Declaration are contradictory. The fact that Exhibit "F" is not dated prior to April 17, 1996 is not contradictory to the statement that the invention was made and completed and actually reduced to practice prior to that date. Although the Exhibit "F" is dated after April 17, 1996, this Exhibit "F" was submitted to confirm the structure of the apparatus of the previous reduction to practice as previously stated. As stated in paragraph 11 of the original Declaration, this shows the apparatus of the mock-up cabinet which was reduced to practice prior to April 17, 1996, but in respect of which no sketch could be located. Exhibit "F" is used to illustrate the components of the mock-up.

Applicants have also submitted the Supplemental Declaration to which a further document was attached as Exhibit "G". As declared in paragraph 7 of the Supplemental Declaration, Exhibit "G" had not been located at the time of the original Declaration. Exhibit "G" was submitted to confirm that the previously noted mock-up clearly was in existence and was tested prior to April 17, 1996--the filing date of QUEISSER et al. More specifically, Exhibit "G" is a Report

which evidences that the claimed invention was reduced to practice by applicants' demonstration of its ability to carry out the claimed invention.

The Supplemental Declaration confirmed the previous Declaration was not contradictory. The Supplemental Declaration confirmed that the mock-up apparatus of the claimed invention which carried out the method of the claimed invention was reduced to practice, tested and demonstrated before April 17, 1996, irrespective of whether the more formal apparatus of Exhibit "F" was reduced to practice prior to April 17, 1996.

Exhibits "A" through "E" and "G" are supporting statements, prepared prior to April 17, 1996, which are verbal disclosures of the invention. Applicants respectfully refer to MPEP Section 715.07, from which it is clear that sketches or drawings are not required evidence. In this respect, Exhibit "F" is superfluous. It is submitted merely as confirmation of the components of the claimed invention. Same is consistent with the recollections of the declarants, as confirmed by Exhibit "G" which establishes (by a document dated prior to April 17, 1996) the reduction to practice and demonstration of the invention before that date.

Applicants respectfully observe that the original and the Supplemental Declarations thus are fully adequate to prove actual reduction to practice in the U.S.A. prior to the effective filing date of the QUEISSER et al. patent.

Applicants also respectfully refer to the provisions of the MPEP in connection with Rule 131. Section 715.07 of the MPEP notes that, when reviewing a Rule 131 Declaration, the Office must

consider all of the evidence presented in its entirety. Thus, the Office must consider fully paragraphs 9 and 10 of the original Declaration and exhibits "A" through "E" and not merely later-dated Exhibit "F" which was provided as a confirmation of the structure found in the mock-up in respect of which applicants could find no currently existing drawing or photograph. It will be appreciated from the original Declaration itself that Exhibit "F" incorporates the important features of the invention which were in existence and tested before the date of Exhibit "F", with the exception of the cabinet being hinged.

While this Section 715.07 goes on to observe that proof of actual reduction to practice does not require a showing that the apparatus actually existed and worked for its intended purpose prior to the filing date of the cited reference, applicants original and Supplemental Declarations do in fact establish such actual existence and workability (in as much as successful tests were carried out before the effective filing date of the reference).

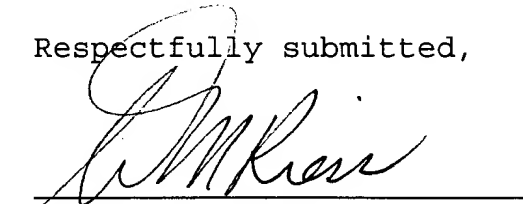
Finally, the penultimate paragraph of Section 715.07 points out that the averments made in a Rule 131 Declaration do not require corroboration.

Applicants respectfully observe that the previously submitted original and supplemental Rule 131 Declarations, their Exhibits and the averments of applicants adequately establish reduction to practice of the claimed invention prior to the effective date of QUEISSER et al. Accordingly, reconsideration and withdrawal of all of the rejections of claims 1-10 and 12-20 on QUEISSER et al. are respectfully requested.

Serial No. 08/879,322

For the above reasons, it is respectfully submitted that all of the claims, claims 1-10 and 12-20, are in condition for allowance. Accordingly, favorable reconsideration and allowance are requested.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims:

Amend claims 1, 10 and 12 as follows:

1. (Thrice Amended) Apparatus for the measurement of fruit particles in a matrix without removing the fruit particles from this matrix, comprising:

a substantially opaque cabinet;

a sample tray adapted to [received] receive a fruit matrix of fruit particles which are within a matrix selected from the group consisting of a sugar matrix, a starch matrix or a sugar and starch matrix, said fruit matrix [is] being of the kind used in fruit fillings, toppings, dairy products or cooked food products;

a camera in the upper portion of said cabinet for taking an image of the fruit particles while they remain within the fruit matrix;

a light source in said cabinet; and

a computer with image analyzing software which analyzes said image of the fruit particles in order to measure the fruit particles without having removed them from the fruit matrix.

10. (Thrice Amended) Apparatus for the measurement of fruit particles in a matrix without removing the fruit particles from this matrix, comprising:

a substantially opaque cabinet with a non-reflecting inside surface;

a sample tray with a light-transmitting bottom, said sample tray adapted to receive a fruit matrix of fruit particles which are within a matrix selected from the group consisting of a sugar matrix, a starch matrix or a sugar and starch matrix, said fruit

matrix [is] being of the kind used in fruit fillings, toppings, dairy products or cooked food products;

a camera in the upper portion of said cabinet for taking an image of the fruit particles while they remain within the fruit matrix;

a light box with light intensity adjusting switches;

an incident light source; and

a computer with image analyzing software which analyzes said image of the fruit particles in order to measure the fruit particles without having removed them from the fruit matrix.

12. (Thrice Amended) A process for the measurement of fruit particles in a matrix without removing the fruit particles from this matrix comprising:

placing in a sample tray a fruit matrix, said fruit matrix being fruit particles which are within a matrix selected from the group consisting of a sugar matrix, a starch matrix or a sugar and starch matrix, said fruit matrix [is] being of the kind used in fruit fillings, toppings, dairy products or cooked food products;

illuminating said fruit matrix so that an image may be obtained in which the fruit particles are distinguishable from the background;

capturing a computer-readable image of at least a portion of said illuminated fruit matrix; and

using a computer and an image analyzing software program to analyze said image and obtain information concerning said fruit particles without removing the fruit particles from the fruit matrix.

Citations from CAB INTERNATIONAL: CBO

1. Liquid chromatographic determination of polydextrose in food matrixes.

CAB 91-01 910301671 NDN- 072-0095-2315-5

Noffsinger, J. B.; Emery, M.; Hoch, D. J.; Dokladalova, J.

JOURNAL NAME- Journal - Association of Official Analytical Chemists**VOL.** 73**NO.** 1

1990

PP. 51-53**DOCUMENT TYPE-** NP**AUTHOR AFFILIATION-** Pfizer Inc., Quality Control Division, Groton, CT 06340, USA.**SUPPLEMENTARY NOTE(S)-** 10 ref.**SUBFILE-** Sugar Industry Abstracts, (1C Vol. 053 Abs. No. 00457)**SUBFILE CODE-** 1C**LANGUAGE-** English

A liquid chromatographic method for the determination of polydextrose, a water-soluble low-calorie bulking agent, in food matrixes is described. It involves (a) aqueous extraction of the polydextrose from the food matrix (b) separation on an Aminex HPX-87C carbohydrate column, with 0.005M CaSO₄.2H₂O as mobile phase (c) refractive index detection for quantitation; comparison with a blank matrix is necessary. Polydextrose recoveries from biscuits, cakes, fruit spreads and chocolate toppings ranged from 91.5 to 100.9%; in 5 replicate analyses, the CV ranged from 0.7 to 4.3%. The method had good precision and selectivity, unlike the modified phenol-H₂SO₄ method, which was previously used for polydextrose determination in food matrixes.

DESCRIPTOR(S)- analysis; Bulking agents; determination; Foods; liquid chromatography; Polydextrose; Polysaccharides

SECTION HEADING CODE- 1C561000**SECTION HEADING-** ANALYSIS AND CONTROL, CHEMICAL ANALYSIS**SECONDARY SECTION HEADING CODE(S)-** 1C543000**SECONDARY SECTION HEADING(S)-** LIQUID SUGAR AND NUTRITIVE SWEETENERS, OTHER SACCHARIDE SWEETENERS

Citations from European Patent Granted: EPB

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EXHIBIT

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2. Low-acetyl gellan gum blends.

EPB 95-19 0225154 NDN- 069-0313-9531-6

INVENTOR(S)- Sanderson, George R. 2813 El Rastro Lane Carlsbad California 92008 US**INVENTOR(S)**- Clare, Ken 2761 Margale Lane Vista California 92084 US**INVENTOR(S)**- Clark, Ross C. 4870 Seda Drive San Diego California 92124 US**INVENTOR(S)**- Pettitt, David J. 12913 Camino del Valle Poway California 92064 US**PATENT ASSIGNEE(S)**- MERCK & CO. INC. (200479) 126, East Lincoln Avenue P.O. Box 2000 Rahway New Jersey 07065-0900 US **DESG. COUNTRIES**- BE; CH; DE; FR; GB; IT; LI; LU; NL; SE**PATENT NUMBER**- 00225154/EP B1**PATENT APPLICATION NUMBER**- 86309183**DATE FILED**- 1986-11-25**PUBLICATION DATE**- 1995-05-10**PATENT PRIORITY INFO**- US, 802646, 1985-11-27**ATTORNEY, AGENT, OR FIRM**- Cole, William Gwyn et al. (29438), European Patent Department Merck & Co., Inc. Terlings Park Eastwick Road, Harlow Essex CM20 2QR, GB**INTERNATIONAL PATENT CLASS**- C08L00500; C08L00514; A23L00105; C08L00500; C08L00514; C08L00514; C08L00500**PUBLICATION**- 1987-06-10, A2, Published application without search report; 1988-06-08, A3, EPO publication date of search report; 1995-05-10, B1, Publication of granted patent**FILING LANGUAGE**- English**PROCEDURE LANGUAGE**- English**LANGUAGE**- English**EXEMPLARY CLAIMS**- A blend of gellan having a level of acetylation of 0.3-0% by weight, xanthan and galactomannan of the ratios by weight:

An aqueous gel comprising 0.1 to 1.5% by weight of a blend as claimed in claim 1.

A gelled good product comprising a matrix in which one or more food ingredients are dispersed, the food ingredients being one or more of vegetable, fruit, meat, fish, sugar, milk, and mixtures thereof, the matrix comprising 0.1 to 1.5% based on total product weight, of a blend as claimed in claim 1.

A gelled food product of claim 3 that is a restructured meat; a confectionary jelly; a jam; a low calorie jam or jelly; a gelled milk dessert; a water-based dessert; an aspic; a pie filling; a vegetable, (ie,) fruit or fish gel; a syrup; or a topping.

DESIGNATED COUNTRY(S)- BE; CH; DE; FR; GB; IT; LI; LU; NL; SE .

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